Exercise

[A] What would be the output of the following programs:

(a)
```
main( )
{
    char  suite = 3 ;
    switch ( suite )
    {
        case 1 :
            printf ( "\nDiamond" ) ;
        case 2 :
            printf ( "\nSpade" ) ;
        default :
            printf ( "\nHeart") ;
    }
    printf ( "\nI thought one wears a suite" ) ;
}
```

OUT PUT

```
HEART
thought one wears a suite
```

(b)
```
main( )
{
    int  c = 3 ;

    switch ( c )
    {
        case 'v' :
            printf ( "I am in case v \n" ) ;
            break ;
        case 3 :
            printf ( "I am in case 3 \n" ) ;
            break ;
        case 12 :
            printf ( "I am in case 12 \n" ) ;
            break ;
        default :
            printf ( "I am in default \n" ) ;
    }
```

OUT PUT

```
I am in case 3
I am in default
```

```
    }
```

(c)
```
main( )
{
    int  k, j = 2 ;
    switch ( k = j + 1 )
    {
        case 0 :
            printf ( "\nTailor") ;
        case 1 :
            printf ( "\nTutor") ;
        case 2 :
            printf ( "\nTramp") ;
        default :
            printf ( "\nPure Simple Egghead!" ) ;
    }
}
```

OUTPUT

Pure Simple Egghead!

(d)
```
main( )
{
    int  i = 0 ;
    switch ( i )
    {
        case 0 :
            printf ( "\nCustomers are dicey" ) ;
        case 1 :
            printf ( "\nMarkets are pricey" ) ;
        case 2 :
            printf ( "\nInvestors are moody" ) ;
        case 3 :
            printf ( "\nAt least employees are good" ) ;
    }
}
```

OUTPUT

Customers are dicey

(e)
```
main( )
{
    int  k ;
    float j = 2.0 ;
```

```
    switch ( k = j + 1 )
    {
        case 3 :
            printf ( "\nTrapped" ) ;
            break ;
        default :
            printf ( "\nCaught!" ) ;
    }
}
```

OUTPUT

Trapped

(f)
```
main( )
{
    int  ch = 'a' + 'b' ;
    switch ( ch )
    {
        case 'a' :
        case 'b' :
            printf ( "\nYou entered b" ) ;
        case 'A' :
            printf ( "\na as in ashar" ) ;
        case 'b' + 'a' :
            printf ( "\nYou entered a and b" ) ;
    }
}
```

OUTPUT

You entered a and b

(g)
```
main( )
{
    int  i = 1 ;
    switch ( i - 2 )
    {
        case -1 :
            printf ( "\nFeeding fish" ) ;
        case 0 :
            printf ( "\nWeeding grass" ) ;
        case 1 :
            printf ( "\nmending roof" ) ;
        default :
            printf ( "\nJust to survive" ) ;
```

OUTPUT

Feeding fish
Just to survive

```
    }
}
```

[B] Point out the errors, if any, in the following programs:

(a)
```
main( )
{
    int  suite = 1 ;
    switch ( suite ) ;
    {
        case 0 ;
            printf ( "\nClub" ) ;
        case 1 ;
            printf ( "\nDiamond" ) ;
    }
}
```

Syntax ERROR

(b)
```
main( )
{
    int  temp ;
    scanf ( "%d", &temp ) ;
    switch ( temp )
    {
        case ( temp <= 20 ) :
            printf ( "\nOooooooohhhh! Damn cool!" ) ;
        case ( temp > 20 && temp <= 30 ) :
            printf ( "\nRain rain here again!" ) ;
        case ( temp > 30 && temp <= 40 ) :
            printf ( "\nWish I am on Everest" ) ;
        default :
            printf ( "\nGood old nagpur weather" ) ;
    }
}
```

can't handle conditional statements

(c)
```
main( )
{
    float  a = 3.5 ;
    switch ( a )
```

```
    {
        case 0.5 :
            printf ( "\nThe art of C" ) ;
            break ;
        case 1.5 :
            printf ( "\nThe spirit of C" ) ;
            break ;                                  can't handle float
        case 2.5 :
            printf ( "\nSee through C" ) ;
            break ;
        case 3.5 :
            printf ( "\nSimply c" ) ;
    }
}
```

(d)
```
main( )
{
    int a = 3, b = 4, c ;
    c = b – a ;
    switch ( c )
    {
        case 1 || 2 :
            printf ( "God give me an opportunity to change things" ) ;
            break ;

        case a || b :
            printf ( "God give me an opportunity to run my show" ) ;
            break ;
    }
}
```

[C] Write a menu driven program which has following options:

1. Factorial of a number.
2. Prime or not
3. Odd or even
4. Exit

Make use of *switch* statement.

The outline of this program is given below:

```
/* A menu driven program */
main( )
{
    int  choice ;
    while ( 1 )
    {
        printf ( "\n1.  Factorial" ) ;
        printf ( "\n2.  Prime" ) ;
        printf ( "\n3.  Odd/Even" ) ;
        printf ( "\n4.  Exit" ) ;
        printf ( "\nYour choice? " ) ;
        scanf ( "%d", &choice ) ;

        switch ( choice )
        {
            case 1 :
                /* logic for factorial of a number  */
                break ;
            case 2 :
                /* logic for deciding prime number */
                break ;
            case 3 :
                /* logic for odd/even */
                break ;
            case 4 :
                exit( ) ;
        }
    }
}
```

Note:

The statement **while (1)** puts the entire logic in an infinite loop. This is necessary since the menu must keep reappearing on the screen once an item is selected and an appropriate action taken.

[D] Write a program which to find the grace marks for a student using **switch**. The user should enter the class obtained by the student and the number of subjects he has failed in.

- If the student gets first class and the number of subjects he failed in is greater than 3, then he does not get any grace. If the number of subjects he failed in is less than or equal to 3 then the grace is of 5 marks per subject.

- If the student gets second class and the number of subjects he failed in is greater than 2, then he does not get any grace. If the number of subjects he failed in is less than or equal to 2 then the grace is of 4 marks per subject.

- If the student gets third class and the number of subjects he failed in is greater than 1, then he does not get any grace. If the number of subjects he failed in is equal to 1 then the grace is of 5 marks per subject